

Amendments to the Claims

Claims 1-8 (canceled)

9. (currently amended) An isolated and purified protein of SEQ ID No: 4, or a <sup>WD</sup> functionally equivalent derivative having at least 85% identity to SEQ ID No: 4, and said <sup>WD</sup> functionally equivalent derivative having a potassium (K<sup>+</sup>)-permeable membrane-channel comprising more than one P domain and three, four, five or more than six transmembrane <sup>2 P domains + 3 or 4 transmembrane segments</sup> segments.

10. (original) The protein of claim 9 wherein the number of P domains is two and the number of transmembrane segments is four.

11. (currently amended) The protein of claim 10 in which the potassium ~~transport~~ <sup>6x1</sup> permeable channel exhibits outward rectification when the extracellular concentration of potassium is 2mM and no rectification when the extracellular potassium is 98mM, thereby evidencing lack of intrinsic voltage sensitivity.

12. (original) The protein of claim 10 in which the potassium transport channel lacks intrinsic voltage, lacks kinetics voltage-and time sensitivities, thereby evidencing characteristics of background conductance.

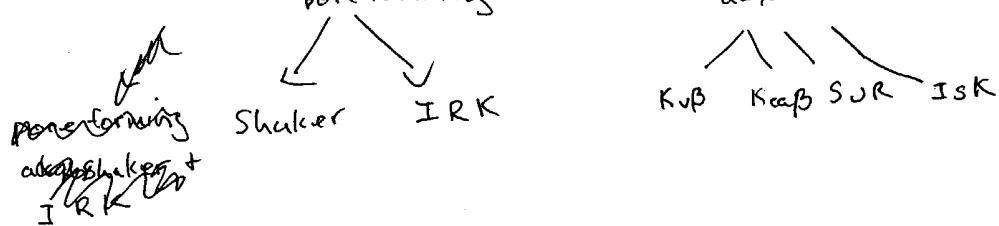
13. (original) The protein of claim 9 in which the activity of the potassium transport channel is regulated by extracellular pH in a physiological range of 6.5 and 7.8.

14. (original) The protein of claim 13 which the potassium channel exhibits 10% transport activity at pH 6.7, and 90% transport activity at pH 7.7.

15. (original) The protein of claim 14 which is human.

Claims 16-23 (canceled)

40 genes for  $K^+$  channels subunits



shaker | 6 TMS w/ hydrophobic core

association w/ Shaker w/ aux  $\Rightarrow$  voltage-dependent  $K^+$  +  $Ca^{2+}$  dependent  $K^+$  channels

IRK  $\Rightarrow$  Inward Rectifier  $K^+$  channels

2 TMS

Both share P domain

- TASK  $\rightarrow$  utility (pg 3) screen drugs for modulatory agent + treat / prevent disease associated w/ channel - pg 27
  - $\rightarrow$  related to TWIK-1 + TREK-1 (pg 16)
  - $\rightarrow$  has 4 TMS (M1-M4) + 2 P domains (P1+P2) (pg 17)
  - $\rightarrow$  mRNA detection in human tissue + mouse
  - $\rightarrow$  physical properties performed in oocytes (pg 18)
  - $\rightarrow$  "K $^+$ " selective hole (pg 24)  $\stackrel{?}{=}$  background mammalian  $K^+$  channel